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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,795	04/12/2001	Takeo Kawase	109263	1435
25944	7590	02/09/2004		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER HODGES, MATTHEW P	
			ART UNIT	PAPER NUMBER
			2879	
DATE MAILED: 02/09/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/832,795

Applicant(s)

KAWASE, TAKEO

Examiner

Matt P Hodges

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5-17 and 19-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3, 5-14 and 31-46 is/are allowed.
- 6) ☒ Claim(s) 21-23, 25-28 and 30 is/are rejected.
- 7) ☐ Claim(s) 24 and 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 112003.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 112003.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Response to Amendment***

The Amendment, filed on 09/30/2003, has been entered and acknowledged by the Examiner.

Cancellation of claims 4 and 18 has been entered.

### ***Claim Objections***

Claim 42 is objected to because of the following informalities:

Line 7, the phrase "the structure or a" appears to contain a typographical error and should read "the structure of a"

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-23, 25-28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bao et al. (US 6,252,253) in view of Epstein et al. (US 5,663,573).

Regarding claims 21 and 22, Bao discloses (see figure 1) a light-emitting device including a substrate (15), a transparent electrode (20), an organic light emitting layer (25), and a second electrode (30). Further the light-emitting layer is corrugated on its uppermost surface.

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(Column 4 line 61 – Column 5 line 32). Bao does not appear to specify the light emitting material comprising a Polyflourine derivative. However Epstein in the same field of endeavor discloses the use of Polyflourine derivatives as light emitting layers in order to improve efficiencies, color ranges, and manufacturing properties. (Column 6 lines 4-30). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of a Polyflourine derivative into the light emitting layer as taught by Epstein into the light emitting device as disclosed by Bao in order to improve efficiencies, color ranges, and manufacturing properties.

Regarding claim 23, the organic light-emitting layer (PPV) disclosed by Bao inherently has an absorption coefficient less than  $1000\text{ cm}^{-1}$  in the region, for instance, of 500nm.

Regarding claim 25, Bao discloses the invention as claimed in the rejection of claim 21 above but does not appear to specify the pitch of the corrugated surface. However Bao does discloses that the choice of the pattern of the surface is decided by the desired pattern of the end user. Further it has been held that a change in size is generally recognized as being within the level of ordinary skill in the art. Thus it would have been obvious to one having ordinary skill in the art to use a pitch of 300 nm, since such a modification would have involve a mere change in the shape of a component.

Regarding claims 26 and 27, Bao alternatively claims the use of pitches in both a first direction and a first and second direction. (See figure 2).

Regarding claims 28 and 30, Bao further discloses the use of three-dimensional periodic structures. (See figure 2).

*Allowable Subject Matter*

Claims 1-3, 5-14, and 31-46 are allowed

Claims 24 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 1, and specifically comprising the limitation of a light emitting device including a corrugation on a light emitting layer that is in contact with the corrugation of a polymer layer formed over a transparent electrode.

Regarding claims 2, 3, 5-14, claims 2, 3, 5-14 are allowable for the reasons given in claim 1 because of their dependency status from claim 1.

Regarding claim 24, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 24, and specifically comprising the limitation of a light emitting device including a corrugation on a light emitting layer where the light emitting layer is formed from a polyfluorine derivative and where the pitch of the corrugation adheres to the equation  $\Lambda = v\lambda_0 / n\sin\Theta_m$ .

Where  $\Lambda$  is the pitch,  $\Theta_m$  is the angle of reflection from the upper and lower surfaces of the layers of light emitting material of light propagation in a wave guide mode  $m$  in the light emitting material,  $\lambda_0$  is the output wavelength, and  $n$  and  $v$  are integers.

Regarding claim 29, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 29, and specifically comprising the limitation of a light emitting device including a corrugation on a light emitting layer where the light emitting layer is formed from a polyflourine derivative and where the corrugation has the structure of a chirping grating.

Regarding claim 31, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 31, and specifically comprising the limitation of a light emitting device including a corrugation on a light emitting layer where the pitch of the corrugation adheres to the equation  $\Lambda = v\lambda_0 / n\sin\Theta_m$ .

Where  $\Lambda$  is the pitch,  $\Theta_m$  is the angle of reflection from the upper and lower surfaces of the layers of light emitting material of light propagation in a wave guide mode m in the light emitting material,  $\lambda_0$  is the output wavelength, and n and v are integers.

Regarding claims 32-39, claims 32-39 are allowable for the reasons given in claim 31 because of their dependency status from claim 31.

Regarding claim 42, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 42, and specifically comprising the limitation of a light emitting device including a corrugation on a light emitting layer where the corrugation has the structure of a chirping grating.

Regarding claims 43-46, claims 43-46 are allowable for the reasons given in claim 42 because of their dependency status from claim 42.

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***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (703) 305-4015. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

**Starting January 13, 2004** the examiner's office phone will change to (571) 272-2454 and the examiner's supervisor, Nimesh Patel can be reached at (571) 272-2457

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

mph 



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